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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,927	04/02/2001	Tomoaki Kumagai	010271	8672

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EXAMINER

PHAM, BRENDA H

ART UNIT PAPER NUMBER

2664

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/787,927

Applicant(s)

KUMAGAI ET AL

Examiner

Brenda Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-17 and 26 is/are allowed.
- 6) ☒ Claim(s) 18-25 and 27-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 18-25 and 27-51 are rejected to as being lack of antecedent basis in the claims.

Claims 18 recites the limitation "said common phase rotation estimation means" on page 173, line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "said averaged signal in one OFDM symbol along time axis" in line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 25 recites the limitation "said phase rotation information detection means" in line 9-10. There is insufficient antecedent basis for this limitation in the claim.

Claim 30 recites the limitation "said integrated value" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 31 recites the limitation "said integrated value" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 32 recites the limitation "said phase rotation estimation means" in line 5-6. There is insufficient antecedent basis for this limitation in the claim.

Claim 34 recites the limitation "said inter-symbol averaging means" in line 13-14. There is insufficient antecedent basis for this limitation in the claim.

Claim 34 recites the limitation "said moving average means" on page 183, line 6. There is insufficient antecedent basis for the limitation in the claim.

Claim 35 recites the limitation "said inter-symbol averaging means" in line 6. There is insufficient antecedent basis for the limitation in the claim.

Claim 36 recites the limitation "said inter-symbol averaging means" on page 184, lines 9-10, 13-14, respectively. There are insufficient antecedent basis for the limitation in the claim.

Claim 40 recites the limitation "said inter-symbol averaging means" in line 13. There is insufficient antecedent basis for the limitation in the claim.

Claim 41 recites the limitation "said phase rotation information detection means" in lines 9-10. There is insufficient antecedent basis for the limitation in the claim.

Claim 43 recites the limitation "said residual carrier frequency error" in line 9-10. There is insufficient antecedent basis for the limitation in the claim.

Claim 43 recites the limitation "said phase rotation estimate circuit" in line 15-16. There is insufficient antecedent basis for the limitation in the claim.

Claim 44 recites the limitation "said inter-symbol averaging means" on page 189, line 6. There is insufficient antecedent basis for the limitation in the claim.

Claim 49 recited the limitation "said inter-symbol vector sum calculation means" in line 11-12. There is insufficient antecedent basis for the limitation in the claim.

Allowable Subject Matter

5. Claims 1-17 and 26 are allowed.
6. Claims 19, 25, 30-32, 34-36, 40-41, 43-44, 49 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
7. Claim 18 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
8. Claims 20-24, 27-29, 33, 37-39, 42, 45-48, 50-51 are rejected to as being dependent upon a 112, 2nd paragraph rejected base claim, but would be allowable if

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rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record fails to teach or fairly suggests in an OFDM packet communication receiver, the deterioration of received signal quality is suppressed, even when carrier frequency error and/or clock frequency error exists between a transmitter and a receiver, and/or phase noise and/or thermal noise is superimposed to a received signal in a receiver. The receive system comprises a channel estimate means for channel estimation by using sub-carriers separated by a Fourier transformation, a coherent detection means for coherent detection of sub-carriers by using result of channel estimation of an output of channel estimate means, a clock frequency error estimate means for estimating phase rotation of each sub-carriers caused by clock frequency error ($f_{\text{RCKL}} - f_{\text{TCLK}}$) by detecting phase rotation or accumulated phase rotation between coherent detected signal and related reference signal by using a part of or all of the coherent detected signals, and a phase compensation means for compensating phase rotation of coherent detected signal according to estimated clock frequency error. Phase compensated signal is applied to a decision means for deciding 1 or 0 of a symbol.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shirakata et al (US 6,169,751 B1) discloses an OFDM receiving apparatus.

Okada et al (US 5,787,123) disclose a receiver for orthogonal frequency division multiplexed signals.

Sato et al (US 6,219,334) disclose a receiving apparatus for receiving orthogonal frequency division multiplexing signal and receiving method thereof.

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Fax to:

(703) 872-9314, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA Sixth Floor (Receptionist).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (571) 272-3135. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin, can be reached on (571) 272-3134.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

Brenda Pham

 8/30/04